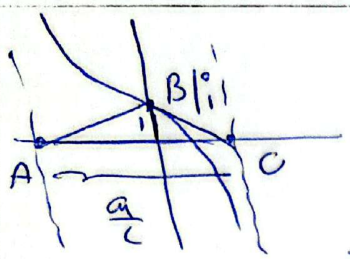
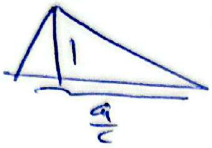
نام و نام خانوادگی ...آیین پنجه فولادگران... پاسخنامه تشریحی تکلیف شماره ...۱۵... کلاس ...دوازدهم پسر A...

۲۰



$\tan(-2x+\frac{\pi}{4}) \longrightarrow T=\frac{\pi}{|-2|}=\frac{\pi}{2}$

$\xrightarrow{x=\circ} \tan\frac{\pi}{4}=1 \longrightarrow B\,\big|\,{}^{\circ}_{1}$



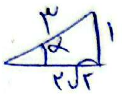
$S_{\text{مثلث}}=\frac{1}{2}\times 1\times\frac{\pi}{2}=\boxed{\frac{\pi}{4}}$ جواب

(۲) ✓

$x^2-(\sin\alpha)x=\frac{1}{4}\cos^2\alpha \xrightarrow{x=\frac{2}{3}} \frac{4}{9}-\frac{2}{3}\sin\alpha=\frac{1}{4}\cos^2\alpha$

$\xrightarrow{\times 36} 16-24\sin\alpha=9(1-\sin^2\alpha)=9-9\sin^2\alpha \Longrightarrow 9\sin^2\alpha-24\sin\alpha+7=0$

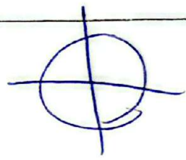
$\sin^2\alpha-24\sin\alpha+63=0 \quad (\sin\alpha-21)(\sin\alpha-3)=0 \to \begin{cases}\sin\alpha=\frac{3}{9}=\frac{1}{3} \checkmark\\ \sin\alpha=\frac{21}{9}=\frac{7}{3} \times\end{cases}$



$\longrightarrow \tan\alpha=\frac{1}{2\sqrt{2}} \longrightarrow 1+\tan^2\alpha=1+\frac{1}{8}=\boxed{\frac{9}{8}}$ جواب

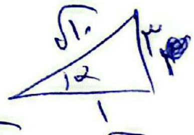
(۲) ✓

$\log \sin\alpha-\log(-\cos\alpha)=\log_{10}3 \qquad \cos\alpha<0,\ \sin\alpha>0$



$\Longrightarrow \log_{10}\frac{-\sin\alpha}{\cos\alpha}=\log_{10}3 \longrightarrow \boxed{\tan\alpha=-3}$

(۲) ✓



$\longrightarrow \sin\alpha=\frac{3}{\sqrt{10}}$

$\longrightarrow \cos\alpha=\frac{-1}{\sqrt{10}}$

$\sin\alpha-\cos\alpha=\frac{3}{\sqrt{10}}+\frac{1}{\sqrt{10}}=\frac{4}{\sqrt{10}}=\frac{4\sqrt{10}}{10}=\boxed{\frac{2\sqrt{10}}{5}}$

$\sin^4\alpha+\cancel{\cos^2\alpha}_{\,1-\sin^2\alpha}=\frac{4}{5} \longrightarrow \sin^4\alpha-\sin^2\alpha+\frac{1}{5}=0 \xrightarrow{\sin^2\alpha=t} 5t^2-5t+1=0$

(۲) ✓

$t_1=\frac{5+\sqrt{5}}{10} \xrightarrow{\sin^2\alpha+\cos^2\alpha=1} \cos^2\alpha=\frac{5-\sqrt{5}}{10} \longrightarrow \cos^4\alpha+\sin^2\alpha=\left(\frac{5-\sqrt{5}}{10}\right)^2+\frac{5+\sqrt{5}}{10}=\frac{8}{10}=0/8$

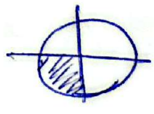
$t_2=\frac{5-\sqrt{5}}{10} \xrightarrow{\sin^2\alpha+\cos^2\alpha=1} \cos^2\alpha=\frac{5+\sqrt{5}}{10} \longrightarrow \cos^4\alpha+\sin^2\alpha=\left(\frac{5+\sqrt{5}}{10}\right)^2+\frac{5-\sqrt{5}}{10}=\frac{8}{10}=0/8$

$\boxed{0/8}$ ⟵ جواب آخر

$\frac{3\sin\alpha+\sin\alpha\cos\alpha}{2(1-\cos^2\alpha)}<0 \longrightarrow \frac{\cancel{\sin\alpha}(3+\cos\alpha)}{2\sin^2\alpha} \longrightarrow \boxed{\frac{3+\cos\alpha}{2\sin\alpha}<0}$ (1)

$\sin\alpha\tan\alpha-\frac{1}{\cos\alpha}>0 \longrightarrow \frac{\sin^2\alpha-1}{\cos\alpha}>0 \xrightarrow{-1\le\sin^2\alpha-1\le 0} \boxed{\cos\alpha=-}$

$\xrightarrow{-1\le\cos\alpha\le 1} \frac{3+\cos\alpha}{2\sin\alpha}<0 \longrightarrow \boxed{\sin\alpha<0}$



ناحیه سوم:

(۲) ✓

۶

$$\frac{۲}{\sin\alpha}+\frac{۳}{\cos\alpha}=۰ \longrightarrow \frac{۲}{\sin\alpha}=\frac{-۳}{\cos\alpha} \longrightarrow \cot\alpha=-\frac{۲}{۳}$$

$$\tan\alpha:\ \frac{\sin\alpha}{\cos\alpha}=-\frac{۳}{۲}$$

$$\tan\alpha+\cot\alpha=-\left(\frac{۳}{۲}+\frac{۲}{۳}\right)=-\left(\frac{۴+۹}{۶}\right)=\boxed{\frac{-۱۳}{۶}}$$

۲ ✓

۷

$$\frac{\sqrt{۱+۲\sin۵۰\cos۵۰}}{\sin۵۰+\sin۱۰}=\frac{\sqrt{\sin^۲۵۰+\cos^۲۵۰+۲\sin۵۰\cos۵۰}}{\cos۴۰+\sin۱۰}=\frac{\sin۵۰+\cos۵۰}{\cos(۶۰-۲۰)+\sin(۳۰-۲۰)}$$

۲ ✓

$$\frac{\sin۵۰+\cos۵۰}{\frac{۱}{۲}\cos۲۰+\cancel{\frac{\sqrt{۳}}{۲}\sin۲۰}+\frac{۱}{۲}\cos۲۰-\cancel{\frac{\sqrt{۳}}{۲}\sin۲۰}}=\frac{\sin۵۰+\cos۵۰}{\cos۲۰}=\frac{\sqrt{۲}\,\overset{\sin۹۵}{\cancel{\sin(۵۰+۴۵)}}}{\cos۲۰}=\boxed{\sqrt{۲}}$$

۸

$$(۱-۲\sin^۲۵)(۲\cos^۲۱۰-۱)\left(\frac{۱-\tan^۲۲۰}{۱+\tan^۲۲۰}\right)=(\cos۱۰)(\cos۲۰)(\cos۴۰)$$

$$\frac{\overset{\frac{۱}{۲}\sin۲۰}{\cancel{\sin۱۰\cos۱۰}}\cos۲۰\cos۴۰}{\sin۱۰}=\frac{۱}{۲}\,\frac{\overset{\frac{۱}{۲}\sin۴۰}{\cancel{\sin۲۰\cos۲۰}}}{\sin۱۰}=\frac{۱}{۴}\,\frac{\cancel{\sin۴۰\cos۴۰}}{\sin۱۰}=\frac{۱}{۸}\,\frac{\cos۱۰}{\sin۱۰}$$

$$=\boxed{\frac{۱}{۸}\cot۱۰}$$ جواب ۲ ✓

۹

$$\sin\alpha+۳\cos\alpha=۲ \longrightarrow \sin\alpha=۲-۳\cos\alpha \xrightarrow{\text{به توان ۲}} \underbrace{\sin^۲\alpha}_{۱-\cos^۲\alpha}=۴+۹\cos^۲\alpha-۱۲\cos\alpha$$

$$۱۰\cos^۲\alpha-۱۲\cos\alpha=-۳ \quad (۱)$$

۲ ✓

$$۵\underbrace{(۲\cos^۲\alpha-۱)}\ \cancel{\cos}۲\alpha-۱۲\cos\alpha \longrightarrow \underbrace{۱۰\cos^۲\alpha-۱۲\cos\alpha}_{-۳}-۵=? \longrightarrow -۳-۵=\boxed{-۸}$$ جواب

۱۰

$$\sin B\sin\hat{C}=\frac{۱}{۲}\Big(\cos(B-C)-\cos(B+C)\Big)=\cos^۲\frac{A}{۲}$$

$$\cos^۲\frac{A}{۲}=\frac{۱+\cos A}{۲} \Rightarrow \frac{۱}{\cancel{۲}}\Big(\cos(B-C)-\cos(\overset{۱۸۰-A}{\cancel{B+C}})\Big)=\frac{۱+\cos A}{\cancel{۲}}$$

۲ ✓

$$\cos(B-C)+\cancel{\cos A}=۱+\cancel{\cos A} \longrightarrow \cos(B-C)=۱ \longrightarrow B-C=۰$$

$$B=C \Rightarrow B=C=۷۲ \longrightarrow A+\overset{۱۴۴}{\cancel{B+C}}=۱۸۰ \longrightarrow \boxed{\hat{A}=۳۶}$$